

## PATENT COOPERATION TREATY

From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF ELECTION  
(PCT Rule 61.2)

To:

Commissioner  
US Department of Commerce  
United States Patent and Trademark  
Office, PCT  
2011 South Clark Place Room  
CP2/5C24  
Arlington, VA 22202  
ETATS-UNIS D'AMERIQUE  
in its capacity as elected Office

Date of mailing (day/month/year) 24 January 2001 (24.01.01)	
International application No. PCT/GB00/02252	Applicant's or agent's file reference PAT 99007*PC
International filing date (day/month/year) 09 June 2000 (09.06.00)	Priority date (day/month/year) 10 June 1999 (10.06.99)
Applicant LEWIS, Ian, David	

1. The designated Office is hereby notified of its election made:

 in the demand filed with the International Preliminary Examining Authority on:

09 December 2000 (09.12.00)

 in a notice effecting later election filed with the International Bureau on:

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2. The election  was was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Pascal Piriou Telephone No.: (41-22) 338.83.38
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# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

JONES,Kendra  
NOKIA IPR DEPARTMENT  
Nokia House, Summit Avenue  
Southwood  
Farnborough  
Hampshire GU14 0NG  
GRANDE BRETAGNE

<input checked="" type="checkbox"/> Prior权	<input type="checkbox"/> Diary
<b>20 SEP 2001</b>	<input type="checkbox"/> Renewal Record
<input type="checkbox"/> Citations	<input type="checkbox"/> Inv Award

PCT

**NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

(PCT Rule 71.1)

Letter

Date of mailing

(day/month/year)

26.09.2001

Applicant's or agent's file reference  
PAT 99007\*PCT

**IMPORTANT NOTIFICATION**

International application No.  
PCT/GB00/02252

International filing date (day/month/year)  
09/06/2000

Priority date (day/month/year)  
10/06/1999

Applicant  
NOKIA MOBILE PHONES LIMITED et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

**4. REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/

European Patent Office  
D-80298 Munich  
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Authorized officer

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14  
PATENT COOPERATION TREATY

PCT

REC 28 SEP 2001  
WIPO PCT

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference <b>PAT 99007*PCT</b>	<b>FOR FURTHER ACTION</b>		See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. <b>PCT/GB00/02252</b>	International filing date (day/month/year) <b>09/06/2000</b>	Priority date (day/month/year) <b>10/06/1999</b>	
International Patent Classification (IPC) or national classification and IPC <b>G02F1/13</b>			
<p>Applicant <b>NOKIA MOBILE PHONES LIMITED et al.</b></p>			
<p>1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 8 sheets, including this cover sheet.</p> <p><input type="checkbox"/> This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).</p> <p>These annexes consist of a total of sheets.</p>			
<p>3. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li>I <input checked="" type="checkbox"/> Basis of the report</li> <li>II <input type="checkbox"/> Priority</li> <li>III <input checked="" type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li>IV <input type="checkbox"/> Lack of unity of invention</li> <li>V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li>VI <input type="checkbox"/> Certain documents cited</li> <li>VII <input checked="" type="checkbox"/> Certain defects in the international application</li> <li>VIII <input checked="" type="checkbox"/> Certain observations on the international application</li> </ul>			

Date of submission of the demand <b>09/12/2000</b>	Date of completion of this report <b>26.09.2001</b>
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer <b>Hauser, M</b> Telephone No. +49 89 2399 2259



INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT

International application No. PCT/GB00/02252

**I. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

**Description, pages:**

1-12 as originally filed

**Claims, No.:**

1-26 as originally filed

**Drawings, sheets:**

1/10-10/10 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- the language of publication of the international application (under Rule 48.3(b)).
- the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- contained in the international application in written form.
- filed together with the international application in computer readable form.
- furnished subsequently to this Authority in written form.
- furnished subsequently to this Authority in computer readable form.
- The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- the description,      pages:
- the claims,      Nos.:

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/02252

the drawings, sheets:

5.  This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):  
*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

### III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

the entire international application.

claims Nos. 22-26.

because:

the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (specify):

the description, claims or drawings (*indicate particular elements below*) or said claims Nos. 22-26 are so unclear that no meaningful opinion could be formed (specify):  
**see separate sheet**

the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed.

no international search report has been established for the said claims Nos. .

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

the written form has not been furnished or does not comply with the standard.

the computer readable form has not been furnished or does not comply with the standard.

### V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

#### 1. Statement

Novelty (N) Yes: Claims 10-13,15-17,19-21

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/GB00/02252

	No:	Claims	1-9,14,18
Inventive step (IS)	Yes:	Claims	
	No:	Claims	10-13,15-17,19-21
Industrial applicability (IA)	Yes:	Claims	1-21
	No:	Claims	

**2. Citations and explanations  
see separate sheet**

**VII. Certain defects in the international application**

The following defects in the form or contents of the international application have been noted:  
**see separate sheet**

**VIII. Certain observations on the international application**

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:  
**see separate sheet**

**Re Item III**

- 1 Claims 22-26 contain references to the drawings. According to Rule 6.2(a) PCT (see also PCT Guidelines III-4.10), claims should not contain such references except where absolutely necessary, which is not the case here. Since it is not clear which features these claims comprise, the examiner is not in a position to examine the subject-matter of these claims.

**Re Item V**

- 2 The documents cited in the international search report will be named D1-D5.
- 2.1 The document D6 (EP 0 731 372) was not cited in the international search report. A copy of the document is appended hereto.
- 3 The present application does not meet the criteria of Article 33(2) PCT, because the subject-matter of claims 1-9, 14, and 18, insofar as the claims can be understood (see section VIII), is not novel over the disclosure of D1 (WO 8707037).
  - 3.1 The reason for this is that document D1 discloses, mainly in figure 1 and the corresponding description (the paragraph bridging pages 4 and 5), and claim 1, a display module with a display device comprising a liquid crystal display comprising first and second liquid crystal cells ("LCD-Platten" 11, 12) positioned along a first axis of the display device (see figure 1); a first display driver ("Treiberstufen 16"; see figure 1: element 16 on the right hand side) for driving the first liquid crystal cell 11; a second display driver (see figure 1: element 16 on the left hand side) for driving the second liquid crystal cell 12.
  - 3.2 Figure 6 of document D1 also shows a display module with a display device (see also the corresponding description in the paragraph bridging pages 7 and 8) comprising a liquid crystal display comprising first and second liquid crystal cells ("LCD-Platten 50 und 51") positioned along a first axis of the display device ("nebeneinander angeordnet[e]"); a first display driver ("Treiberstufen 16") for

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/02252

driving the first liquid crystal cell 50; a second display driver ("Treiberstufen 54") for driving the second liquid crystal cell 51.

- 3.3 Since the modules of document D1 are suitable for displaying information (see abstract), the control circuit of the display device ("nicht dargestellte elektronische Steuersetzung"; claim 1: "LCD-Platten, deren Anzeigeelemente über Treiberstufen mit einer elektronischen Steuersetzung verbunden sind"; page 1, last paragraph: "Treiberstufen ... und ... ein Mikrocomputer") must be suitable for synchronising the drivers. Means for synchronising the drivers are therefore considered implicitly disclosed. The paragraph bridging pages 4 and 5 that the device comprises a connector ("Anschlußstecker") for connecting the display circuitry to an external element.
- 3.4 Since the features of claims 1, 9 and 18 are anticipated by corresponding features of the device of document D1, the subject-matter of these claims is not novel.
- 3.5 Furthermore, document D3 (US 5 703 616) discloses, mainly in figure 2 (see also the corresponding description in column 3, line 56 to column 5, line 7), a similar display module comprising a display device with liquid crystal display sections 12a-d symmetrically positioned along a bisecting axis extending along the larger dimension of the display (vertical in figure 2), and corresponding drivers "SEG1-4" arranged at opposed sides of the LCDs along that axis, for driving the LCD sections, and means for synchronising the drivers ("liquid crystal timing controller (LCTC) 32"). Figure 2 shows that the sections of the "LCD Panel" also symmetrically arranged with respect to a bisector perpendicular to the first axis and that the display driver circuitry of the "LCD Panel" is connected to external elements (e.g. 24, 45). A connector is therefore considered implicitly disclosed. It is also clear that the display device comprises some kind of power control circuitry.
- 3.6 Since the features of claims 1-9, 14, and 18, insofar as these claims can be understood (see section VIII), are anticipated by corresponding features of the device of document D3, the subject-matter of these claims is not novel.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/02252

- 4 Dependent claims 10–13, 15–17, and 19–21, do not contain any features (see section VIII) which, in combination with the features of any claim to which they refers, meet the requirements of the PCT in respect of novelty and inventive step for the following reasons.
  - 4.1 The further features of claims 10–13 and their technical effects are *per se* well known in the art, such that a skilled person would regard it as a normal design option to include these features in the devices of documents D1 or D3 in order to achieve the desired effects. The subject-matter of claims 10–13 is therefore considered not to involve an inventive step (Article 33(3) PCT).
  - 4.2 Similar arguments apply to the use of flexible printed circuit foils for supporting and connecting the elements of the LC display device (claims 15–17), which is also considered a normal design option known in the art, for example, from document D6 (EP 0 731 372; see, for example, lines 9–19 of column 1). Using the above discussed display devices/modules in a portable/radio communications device or in a radio telephone (claims 19–21) is common practice (see, for example, lines 7–10, column 3 of document D6). Hence, the subject-matter of claims 15–17, and 19–21, is considered to lack an inventive step (Article 33(3) PCT).

**Re Item VII**

- 5 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents D1 and D3 is not mentioned in the description, nor are these documents identified therein.
- 6 The features of the claim/s are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

Re Item VIII

7 The application does not meet the criteria of Article 6 PCT, since claim 1 is not clear for the following reasons.

7.1 Although the acronyms "LCD" and "FPC" are used like reference signs in claims 1 and 13, respectively, they are also used to refer to features throughout the set of claims, which is confusing.

7.2 Since the orientation of the liquid crystal display is undefined, the expressions "height" and "width" of the LCD (claims 3 and 4) are substantially meaningless.

7.3 The meaning of the expression "symmetrical about a bisector" as used in claims 5 and 6 is not clear. Moreover, figure 2, for example, shows that the "support frame 24", which is part of the display device, is asymmetric.

7.4 The meaning of the expression "intermediate element" found in claims 9-14 is obscure. It is not clear to which structural feature this expression is intended to refer, since it is not used in the description of the embodiments. It seems therefore that the claims lack support by the description. Moreover, the expression cannot be used to distinguish the subject-matter of the claims from the prior art, since its meaning is vague.

7.4.1 Although it can only be guessed that the "FPC foil connector 26" mentioned in the description of figure 2 is meant to be referred to by the expression "flexible printed circuit (FPC) foil" in claim 13, the claim will be interpreted accordingly.

7.5 Although claims 1-9 define display **devices**, claims 15 and 18 refer to the "arrangements" as claimed in any preceding claim.

7.6 The statements in the lines 5-16 on page 12 render the claims unclear as a whole (PCT Guidelines III-4.3a).

## PCT REQUEST

Original (for SUBMISSION) - printed on 09.06.2000 12:39:01 PM

0-1	For receiving Office use only International Application No.	
0-2	International Filing Date	
0-3	Name of receiving Office and "PCT International Application"	
0-4 0-4-1	Form - PCT/RO/101 PCT Request Prepared using	PCT-EASY Version 2.90 (updated 08.03.2000)
0-5	<b>Petition</b> The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty	
0-6	Receiving Office (specified by the applicant)	United Kingdom Patent Office (RO/GB)
0-7	Applicant's or agent's file reference	PAT 99007*PC
I	Title of invention	A DISPLAY DEVICE
II	Applicant II-1 This person is: II-2 Applicant for II-4 Name II-5 Address:	applicant only all designated States except US NOKIA MOBILE PHONES LIMITED KEILALAHIDENTIE 4 FIN-02150 ESPOO Finland FI FI
II-6	State of nationality	FI
II-7	State of residence	FI
II-8	Telephone No.	+358 24 3061
II-9	Faxsimile No.	+358 24 3064 544
III-1	Applicant and/or inventor III-1-1 This person is: III-1-2 Applicant for III-1-4 Name (LAST, First) III-1-5 Address:	applicant and inventor US only LEWIS, Ian, David 7 Spencer Close Church Crookham Fleet, Hampshire GU13 0EG United Kingdom GB GB
III-1-6	State of nationality	GB
III-1-7	State of residence	GB

## PCT REQUEST

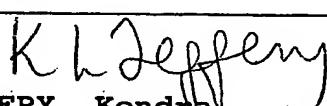
Original (for SUBMISSION) - printed on 09.06.2000 12:39:01 PM

IV-1	Agent or common representative; or address for correspondence The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: Name (LAST, First) Address:	agent  <b>JEFFERY, Kendra</b> <b>NOKIA IPR DEPARTMENT</b> <b>Nokia House</b> <b>Summit Avenue</b> <b>Farnborough, Hampshire GU14 0NG</b> <b>United Kingdom</b> <b>01252 865000</b> <b>01252 865080</b>
IV-1-3	Telephone No.	
IV-1-4	Facsimile No.	
IV-2	Additional agent(s)	additional agent(s) with same address as first named agent
IV-2-1	Name(s)	<b>HIBBERT, Juliet; HAWS, Helen, Louise; HIGGIN, Paul; MUIR, Henry; FRAIN, Timothy</b>
V	Designation of States	
V-1	Regional Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	AP: GH GM KE LS MW SD SL SZ TZ UG ZW and any other State which is a Contracting State of the Harare Protocol and of the PCT  EA: AM AZ BY KG KZ MD RU TJ TM and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT  EP: AT BE CH&LI CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE and any other State which is a Contracting State of the European Patent Convention and of the PCT  OA: BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG and any other State which is a member State of OAPI and a Contracting State of the PCT
V-2	National Patent (other kinds of protection or treatment, if any, are specified between parentheses after the designation(s) concerned)	AE AG AL AM AT (patent and utility model) AU AZ BA BB BG BR BY CA CH&LI CN CR CU CZ (patent and utility model) DE (patent and utility model) DK (patent and utility model) DM DZ EE (patent and utility model) ES FI (patent and utility model) GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR (patent and utility model) KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK (patent and utility model) SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW

## PCT REQUEST

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PAT 99007\*PC

V-5	<b>Precautionary Designation Statement</b> In addition to the designations made under items V-1, V-2 and V-3, the applicant also makes under Rule 4.9(b) all designations which would be permitted under the PCT except any designation(s) of the State(s) indicated under item V-6 below. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit.	
V-6	<b>Exclusion(s) from precautionary designations</b> <b>NONE</b>	
VI-1	<b>Priority claim of earlier national application</b> Filing date	
VI-1-1	10 June 1999 (10.06.1999)	
VI-1-2	Number	
VI-1-3	9913538.6 Country GB	
VII-1	<b>International Searching Authority Chosen</b> <b>European Patent Office (EPO) (ISA/EP)</b>	
<b>Check list</b>		
VIII-1	Request	number of sheets
VIII-1	4	-
VIII-2	Description	11
VIII-2	11	-
VIII-3	Claims	4
VIII-3	4	-
VIII-4	Abstract	1
VIII-4	1	p99007pct.txt
VIII-5	Drawings	10
VIII-5	10	-
VIII-7	<b>TOTAL</b>	30
VIII-8	<b>Accompanying items</b> paper document(s) attached	
VIII-8	Fee calculation sheet ✓ -	
VIII-12	<b>Priority document(s)</b> <b>Item(s) VI-1</b>	
VIII-16	PCT-EASY diskette - diskette	
VIII-18	<b>Figure of the drawings which should accompany the abstract</b> <b>6a</b>	
VIII-19	<b>Language of filing of the International application</b> <b>English</b>	
IX-1	<b>Signature of applicant or agent</b> 	
IX-1-1	Name (LAST, First) <b>JEFFERY, Kendra</b>	

## FOR RECEIVING OFFICE USE ONLY

10-1	<b>Date of actual receipt of the purported International application</b>	
10-2	<b>Drawings:</b>	
10-2-1	Received	
10-2-2	Not received	
10-3	<b>Corrected date of actual receipt due to later but timely received papers or drawings completing the purported International application</b>	
10-4	<b>Date of timely receipt of the required corrections under PCT Article 11(2)</b>	

**PCT REQUEST**

PAT 99007\*PC

Original (for SUBMISSION) - printed on 09.06.2000 12:39:01 PM

10-5	International Searching Authority	ISA/EP
10-6	Transmittal of search copy delayed until search fee is paid	

**FOR INTERNATIONAL BUREAU USE ONLY**

11-1	Date of receipt of the record copy by the International Bureau
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(19) World Intellectual Property Organization  
International Bureau(43) International Publication Date  
21 December 2000 (21.12.2000)

PCT

(10) International Publication Number  
WO 00/77560 A3

(51) International Patent Classification<sup>7</sup>: G02F 1/13, G09G 3/36, H04N 5/74

(21) International Application Number: PCT/GB00/02252

(22) International Filing Date: 9 June 2000 (09.06.2000)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
9913538.6 10 June 1999 (10.06.1999) GB

(71) Applicant (for all designated States except US): NOKIA MOBILE PHONES LIMITED [FI/FI]; Keilalahdentie 4, FIN-02150 Espoo (FI).

(72) Inventor; and

(75) Inventor/Applicant (for US only): LEWIS, Ian, David [GB/GB]; 7 Spencer Close, Church Crookham, Fleet, Hampshire GU13 0EG (GB).

(74) Agents: JEFFERY, Kendra et al.; Nokia IPR Dept., Nokia House, Summit Avenue, Farnborough, Hampshire GU14 0NG (GB).

(81) Designated States (national): AE, AG, AL, AM, AT, AT (utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (utility model), DE, DE (utility model), DK, DK (utility model), DM, DZ, EE, EE (utility model), ES, FI, FI (utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KR (utility model), KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

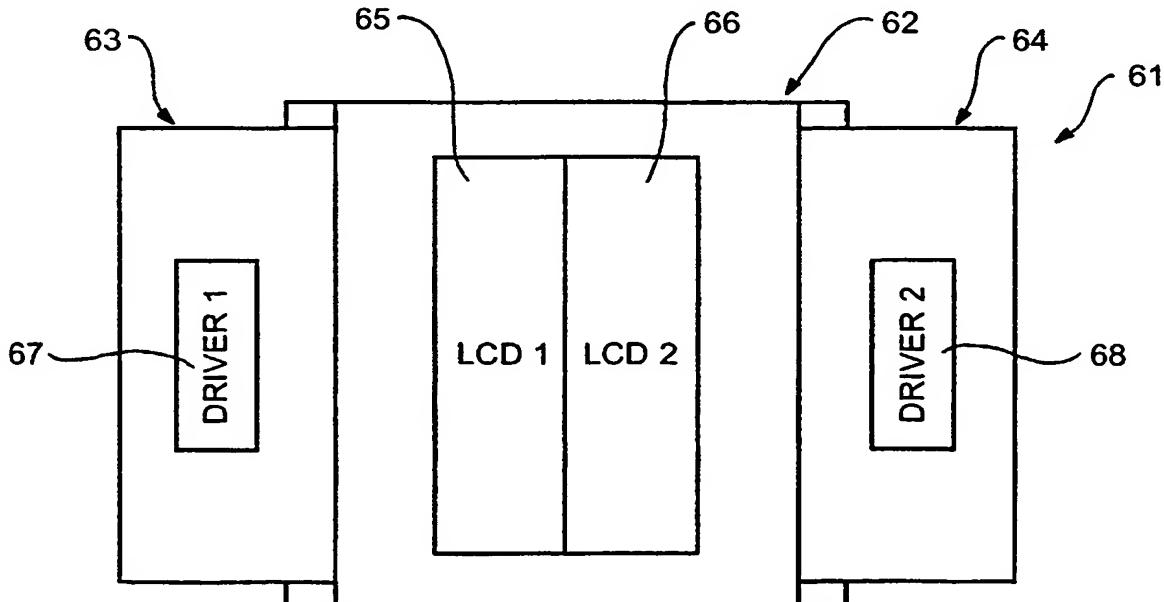
(84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

Published:  
— with international search report

(88) Date of publication of the international search report: 18 October 2001

[Continued on next page]

(54) Title: A DISPLAY DEVICE



WO 00/77560 A3

(57) Abstract: A display device (61) is disclosed which comprises a liquid crystal display (LCD) having first and second liquid crystal cells (65, 66) positioned along a first axis of the display device (61). The display device further comprises a first display driver (67) for driving the first liquid crystal cell (65), a second display driver (68) for driving the second liquid crystal cell (66), and means for synchronising the drivers (67, 68).



*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

# INTERNATIONAL SEARCH REPORT

Int. Jnl Application No

PCT/GB 00/02252

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC 7 G02F1/13 G09G3/36 H04N5/74

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
 IPC 7 G02F G09G H04N G09F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 87 07037 A (BOSCH GMBH ROBERT) 19 November 1987 (1987-11-19)  page 2, paragraph 4 -page 3, paragraph 1 page 6, paragraph 3 -page 7, paragraph 1; figures 1-6	1,9,10, 18,19, 22-25
Y		2-8,11, 12,14, 20,21,26
A	---	13,15-17

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

\* Special categories of cited documents :

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**INTERNATIONAL SEARCH REPORT**

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**C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT**

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5 841 431 A (SIMMERS CHARLES RUSSELL) 24 November 1998 (1998-11-24)  column 1, line 10 - line 21 column 1, line 46 -column 2, line 4 column 5, line 7 - line 43 column 6, line 20 -column 7, line 21; figures 2-6 ---	2-8,11, 12,14, 20,21,26
A	US 5 703 616 A (KAWASUGI KAZUHIRO) 30 December 1997 (1997-12-30) column 1, line 38 -column 2, line 37 column 10, line 55 - line 66; figures 1,2 ---	1-26
A	US 5 612 741 A (LOBAN JERRY M ET AL) 18 March 1997 (1997-03-18) the whole document ---	1-26
A	DE 196 32 848 A (SIEMENS AG) 26 February 1998 (1998-02-26) the whole document ---	1-26

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/02252

Patent document cited in search report	Publication date	Patent family member(s)			Publication date
WO 8707037	A 19-11-1987	DE EP JP	3615417 A 0306479 A 1502538 T		12-11-1987 15-03-1989 31-08-1989
US 5841431	A 24-11-1998	AU CN EP WO	3913497 A 1246194 A 1019896 A 9821709 A		03-06-1998 01-03-2000 19-07-2000 22-05-1998
US 5703616	A 30-12-1997	JP CN DE DE EP HK KR US US	6324644 A 1099887 A,B 69416896 D 69416896 T 0631270 A 1013491 A 151220 B 5663745 A 5852428 A		25-11-1994 08-03-1995 15-04-1999 08-07-1999 28-12-1994 23-06-2000 15-12-1998 02-09-1997 22-12-1998
US 5612741	A 18-03-1997	NONE			
DE 19632848	A 26-02-1998	DE EP ES	59702592 D 0824252 A 2153626 T		14-12-2000 18-02-1998 01-03-2001